SOUHEGAN TECHNICAL REVIEW COMMITTEE

Meeting Minutes

March 22, 2004
NH Department of Environmental Services
Rooms 110-111
9:30 AM – 11:30 AM

Members Present:

Alden Greenwood
William C. Ingham
John R. Nelson
Carl Paulsen – By Phone
Brian Mrazik
Douglas Bechtel
Vernon B. Lang
Jim MacCartney
Ralph W. Abele
Donald L. Ware
Thomas Roy – Vice Chair
Kenneth D. Kimball – Chair

Members Absent:

Representative Richard T. Cooney
Senator Russell E. Prescott

Others Present:

WMPAAC Members:

Tom Neforas
Robin Warren
, Bill Ruoff
Larry Major
Nancy Rose Redling,

Guests:

Stephen Najjar, USAF, New Boston Air Force Station
Mark Smith, The Nature Conservancy
Bill Heinz, GSHA
John Hodsdon, NHACD
Allan Palmer, PSNH
Ralph B. Pears, Monadnock Mtn. Spring Water Co.
Jack Donohue, ENSR International
Tom Sullivan, Gomez & Sullivan

DES Staff Present:

Paul Currier, Administrator Watershed Management Bureau
Wayne Ives, Instream Flow Coordinator
Steve Couture, Rivers Coordinator, DES
Rick Chormann, NHDES
Marie LosKamp, Executive Secretary, Watershed Management Bureau

9:30 – 9:45 Introductions and Acceptance of February 6, 2004 Minutes.

- **Chair, Ken Kimball opened the meeting and requested a motion to accept draft minutes of February 6, 2004. A motion was made by Bill Ingham to accept the draft minutes, motion seconded, any discussions? All in favor of accepting the minutes signify by saying aye, all opposed none, draft minutes of February 6, 2004 accepted and adopted.**

- **Introductions were made**.

Ken – As a quick recall for many members and guests here, one of the tasks in front of this committee is to work on the selection of a consultant/contractor who will proceed ahead to do both the instream flow analysis and the water management plan, two representatives were picked through e-mails. They are John Nelson and Ralph Abele to represent this committee in going through the initial stages of that consultant selection process. At the last meeting we had talked about and decided that it might be worthwhile for committee members here to get an overview of some of the methods that potentially could be used and Ralph Abele from EPA had agreed to give a presentation on some of those methods. This is just a refresher for some and may be a new introduction to others.

Ken turned the meeting over to Ralph, but. . .
Ken – Since the Powerpoint presentation is not working, we will adjust accordingly and move down to the second item. Ken asked Paul to initiate the next discussion. The two TRC members on the Consultant Review Team are John Nelson and Ralph Abele.

9:45 –10:00 Selection and Results of the Consultant Review Team

Paul – The Consultant Selection Team met having reviewed each of the 8 firms' qualifications-and-experience statements and ranked them in accordance with a specified scoring process. Met and selected 5 consultants to receive a request for proposals and to be interviewed. Wayne read off the 5 selected consultants.

- University of New Hampshire / University of Massachusetts / Normandeau Associates, Inc.
- The Louis Berger Group, Inc. / Thomas R. Payne and Associates
- Gomez and Sullivan, P.C. / Ann Gallagher / ESS Group, Inc. / The Preservation Company / Independent Archaeological Consultants
- Kleinschmidt Energy & Water Resource Consultants / GZA GeoEnvironmental, Inc. / Hydrologic Services, Inc.
- ENSR International / Woodlot Alternatives, Inc. / Wright-Pierce/ ERG, Inc. / East Coast Mapping, Inc.

Ralph Abele – DES put together some ranking questions and we were comfortable with them. There seemed to be a break between the first 5 and the other 3 in terms of overall expertise and experience of doing the types of things that we are interested in, both from the instream flow side and the water management side, some very good groups and lots and lots of experience.

John Nelson – It was a tough choice but there seemed to be a clear distinction between the two groups. We are all comfortable with the choice.

10:00 – 10:15 Overview of RFP Scope of Work.

Paul Currier - What is being handed out is a draft request for proposals which was e-mailed to the short listed consultants this morning. It is still in draft, it has not been completed, and it is in internal review. We basically are on a fast track to get one consultant selected before the summer season so the consultant can have the summer season available for field work. So this is a draft of what we would like to do and we are requesting both advisory committees to look it over and get back to us by Wednesday if you have any comments. This request for proposal is intended to form the basis for an eventual contract with the selected consultant. It follows the sequence of events and the structure that is in the rules and provides additional detail as to how we think the

project should proceed and the milestone for deliverables on which payment would be made to the consultant. Any questions?

Ken- If you can just review for committee members the timeline.
Paul – We are still hoping to be on track with the timeline that was handed out at the first meeting. We are perhaps ahead of schedule. We are hopeful we can receive proposals from the contractors in a couple of weeks and have interviews maybe in three weeks, and then select a consultant for negotiations as soon as possible. Have the contract in place, signed by the beginning of July 2004, and we are hoping we can beat that. That will allow the summer for field work and several milestones that you will see in the RFP, a draft of the protected instream flow study by March 2005 which will be the first major milestone.

Ken – I guess the question that I would throw out to committee members right now is that we have two representatives who have helped in the review process of selecting 5 from 8, and the next more complicated process probably will be to not only select 1 from the 5, but also to take a look at the different strategies that the consultants are recommending as to how they might try to proceed ahead with the challenging task that is out there, and it does beg the questions of just what role and how this committee wants to work in that review process as we move to that next step. I will throw out the general question to committee members right now how we want to do that understanding that we do have this short timeframe. I realize it is a little tough to respond to that question because you don't have the five different proposals in front of us. Procedurally it would be good for us to figure out how we want to deal with this as we move though this next phase.

- **After discussion it was the committees' decision to:**
  1. **By Wednesday, get committee comments on Scope of Work back to Wayne,**
  2. **In mid-April the committee will receive electronic executive summaries and a date certain to give questions and opinions to Wayne. Wayne to get them to John and Ralph,**
  3. **End of April John and Ralph participate on selection committee doing interviews,**
  4. **Tuesday, May 4th 1:30 pm meeting with TRC after interviews and before final decision is made for John and Ralph to get back to committee and report on what they have observed, and committee would give its feedback to John and Ralph before final recommendation to DES of consultant selection, and**
  5. **Wayne will send out a timeline calendar of dates as soon as they become available.**

- **Note – Any communications with Vern Lang has to be done <u>other than</u> e-mail.**

10:15 -11:00 Overview of PISF Assessment Methods – Ralph Abele

Ralph Abele gave a Powerpoint presentation and a paper copy was previously sent to folks with links to publication via e-mail. SouheganDEStalk.ppt. Wayne will put everything discussed on the DES web site under Souhegan. In background over the last couple of years in Connecticut and Rhode Island there have been intensive statewide processes to look at setting instream flow policies. In the two states these processes have involved water suppliers, industry, conservationist, state and federal people. Hundreds of people have been working on these things on everything from biological issues, water rates, etc. As part of that people spend a lot of time looking at different techniques for setting stream flow. This presentation is a summary of those techniques. There are some USGS reports where they have gone out and looked at a lot of these techniques and there are links to those. The latest one just came out in paper last week. It is looking at standard setting techniques in southern New England. There is also a concept called the setting a target fish community which is a biological basis for the different flow techniques (link supplied) which is something the state and federal agencies have been working on in southern New England to identify the riverine fish species that modeling should look at when the models are set up. The fourth point on the hand out is the Stream Flow Report that the Technical Committee put together down in Connecticut. It has a good analysis of different techniques. There is a lot of

good information in it. These are all good reference documents. There is a lot of information that you will be able to link in to off this e-mail.

Ralph started off with Mark Twain's disclaimer that it is always dicey to tell fish stories but even more so when the people know the fish. As I look around the room, there are people that have had a lot of experience with the fish of the Souhegan, and having said that, I'll try to explain briefly the different methods that people have used to try to describe appropriate stream flows in rivers. These techniques have been developed in the west and east and some have been used in hundreds of situations around the country and some are much newer.

Ralph showed a basic EPA type slide and the purpose is when you are trying to define the integrity of aquatic resources, which is what we have to do in this protected instream flow study, habitat structure and flow regime are really important as well as the chemical variables, the biotic factors, and energy sources. These are all slightly different wording elements that have to be looked at as you go through the protected instream flow study. As you look at these different techniques, some look at a limited number of flows, other ones look at a wide range of flows. This is just kind of a summary of the types of flows you may be looking at as you are looking at a protected instream flow study. The other important thing as you look at this is the concept of connectivity. In other words, how are the different habitat units connected? Are their barriers between them, are they manmade? From a hydrology point of view in the old days when people were doing these flow studies, most of the work was done just looking at the magnitude, the volume of water. In order to do an adequate study and the flow technique, it is important to look at the frequency, duration, and timing of the flows. Geomorphology is important, what is the bottom like, what the sediment transport like, obviously the biology is important. Ways to look at habitat and its relationship to flow, water quality and issue of connectivity. There are a lot of types of instream flow assessment tools and there are different ways to lump them.

There are two types of techniques that are called standard setting or a desk top approach, which in general doesn't have a lot of field work, and then there are the incremental type projects. There is a big cost difference between the standard setting and an incremental approach. A standard setting approach gives you a flow or a few flows. It is harder to use the standard setting approach when you are trying to look at a wide range of situations. You get more information out of incremental approaches but it costs more.

Baseline standard setting and incremental are the two big types. USGS publication documents looked at four standard setting approaches in a wide range of situations. We have one for the Ipswich River, one for a river in Rhode Island and most recently for 10 or 15 gage sites in southern New England. 7Q10 is used in permits for calculating dilution, it is a single number. Aquatic Base Flow (ABF) is another single point but it is a higher flow.

Tennant Method – based on habitat flow relationships

Aquatic Based Flow (ABF) – part of NE flow method developed by Fish and Wildlife Service, and it basically uses hydrologic statistics as a survey for aquatic habitat.

Wetted perimeter- it assumes that habitats provided by the flow that wets the channel bottom begins to rise up the bank. You have to go out into the field and measure this. The USGS publication has a lot more information.

R2 Cross – You look at the flow that would produce an average depth of $2/10^{th}$ of a foot and a velocity of 1 foot per second and provide 50% of the bottom and calculate what that flow would actually be and it differs on how wide the stream is.

Indicators of Hydrologic Alternation (IHA) – does use gage records, standard setting approach, can be done in office. Looks at pre and post dam trying to focus on frequency and duration. Run through a lot of calculations for high and low flows.

Instream Flow Incremental Methodology (IFIM). This is a 4 or 5 day course that Fish & Wildlife Service puts on, and I'll try to do it in 5 or 10 minutes. This is one of the most common site-specific techniques that have been used. It looks at incremental changes in stream flow and the effect of it on depth, velocity, substrate and cover and then it relates these changes in the physical components to the suitability of these for various fish species and in some cases invertebrates. There is a hydraulic model component that deals with the physical aspects of it. There is a biological model development, habitat suitability and impact assessment and all feed together into the impact assessment. **Physical habitat simulation (P-HAB-SIM)** – the hydrologic model development, that is what this really is and it shows changes in habitat as flows increase or decrease.

Wayne – When we did our approach for the Souhegan, we based our cost estimates on the number of river miles that had to be covered, and the number of affected water users and affected dam users. This information is on our web site.
Ralph - You could cost out a particular transect, but the trick is to figure out how many transects you have to do to represent a river. If you have a totally uniform 10 mile stretch of river, you might not need to do as many as if you had 8 different units in there.
Ken – IFIM – it did evolve out of hydro electric relicensing. A lot of times you had storage, so you could go out and manipulate the flows. If you are working with a river system that does not have upstream storage, you cannot control it.
Ralph – In its HUC, even if you get the flow, say you have a 50 mile stretch of river, if you get the flow you want at one end by the time you have done the studies there you could get a thunder storm. You can't get a river to sit still while you do studies on it. When they actually worked this through they were a lot of wells involved. That is how basically the irrigation was going to take place. If you know what affects an irrigation system would have on stream flow, you can plug that in.

Mesohabsim – what we looked at and came away with was looking at habitat units (9) in illustration riffle, rapid, pool, etc. What this technique does, again you need to look at different flows, but in a particular pool you would actually go out and survey that pool using sophisticated electronic surveying equipment. In that pool you take measurements using a random number process of width, depth and velocity. You would have an idea of a lateral extend of a pool and an ideal of the velocity, depth and substrate were like and the same with ripples and rapids. You would go in and map out the different habitat units at different flows. It is a tradeoff when doing these studies, do you do a cross section of IFIM and say each of these 10 sections, or do you come up with another way of not getting as precise information as you would with doing a detailed cross section, but using a mesohab you would have information on this whole stretch, a way to gather information along an entire river.

Target Fish Communities – We identified what we though the target fish communities should be for that particular river. These are native fish that should be in that river, were in the river, and may have been eliminated for a variety of reasons. The reason we did this we were trying to figure out in terms of restoring flows to the river, which is part of the charge that you are doing, which species did we really think were important to look at. Target community spawning criteria, look at what changes in habitat would be with longer flows, simulations of impact of dams, some fish need faster water or shallower water, a dam which raises level would not be good for these fish.

IFIM or a **Mesohabsim** what happens to habitat and flow over time, what is an ideal flow and then is it something you may want to get into. There is a lot of experience using IFIM. There is less

experience of doing the Mesohabsim, it is something that shows some promise but we don't have as many examples of that done across New England.

Target Fish Community Approach - Anyone interested in that?
Ken – As a refresher for committee members, a lot of these models have really been designed at the fish communities which in part tie into water quality standards. The reason why rivers have been designated are not only for that purpose but also to protect instream flow for other values as well where in the methods out there are probably not as well advanced as these, but that is one of the challenges we will have to look at as how do we assess how much water is necessary for recreation and other types of uses.

Ralph – You are right although you could. They are all modeled out there to look at some of the recreational aspects, you can actually figure out the flows that are necessary for tubing rafting, etc. So you could build those parameters in there and do that, and there are water quality models you can link into these IFIM types, but this is all fish.

Develop a target fish community to assess ecosystem integrity – approach has been applied in ½ dozen rivers in NE. Using for wide range of purposes, one could work into a protected instream flow. What is a target fish community that is appropriate for a natural river? Rivers should have river fish communities. This is a process where you define what target community is, what is there now, what is the difference and what can be done to get back to that category.

Quinebaug study. This approach has been applied in a half dozen rivers in New England. All fresh water fish have been classified into either fluvial specialists require flowing water year round, fluvial dependents need flowing water; and the macrohabitat generalist which don't necessarily require flowing water at any stage in their life cycle, although some of them can live in flowing water. I heard from Scott Decker this AM and they have done some limited sampling on the Souhegan. Where they took their sampling there was a high percentage of common shiners and creek chub suckers. There are a lot of fluvial fish in the Souhegan. The process the developer referenced is a target fish community and is using reference rivers (quality rivers) similar in nature. It is looking at whole systems. Ideally you would have biomass information.

This is a lot of information that I have thrown at you. There are a lot of handouts, electronic handouts for further reading. Instream flow tool kit from Washington State, Wayne will have a link posted to our site.

Ralph - If you don't have time to read much, the USGS report on the Ipswich River there is an excellent 2 or 3 page summary of relations among stream flow, aquatic habitat and fish communities, it is a really well written summary and it will get you up to speed and it is on internet, Ipswich River Massachusetts 1998-99. Wayne will also post on DES web site and you can go right to it.

Ken – Any questions for Ralph? This has been an excellent refresher which allows us to understand the perplexity that will be in front of us. Needless to say we will probably get proposals that recommend doing different types of these techniques and our job is to try and figure out which ones will best serve the Souhegan River relative to the task in front of us.

Question: This has been very exhaustive. What amount of this are we going to see in the report that comes out from the contractor?

Ken - We can see probably as much as we want to see, because in the end there will be a final report which I assume would be available in some shape or form that people could look at. In

addition if the committee wants to get out at some point during the sampling to get a better fix as to how the data is being collected we could take some sort of field trip to take a look at it as well.

Ralph – I would think you would run the range from like some almost raw data, you can spit out page after page doing one of this IFIM analyses.

Comment - We pump water from the Souhegan River and we are at the beginning of the flood plain, and every time we have dug a pond or gone down any depth, we have gone down to 12 or 15 feet, we have come to a layer of blue clay at varying depths; and when we dig a pond, those ponds are either sitting as a basin in the hill with no connection to the groundwater, some you break through and you are into the aquifer and then the water comes boiling up out of it. We are wondering what the relation of the river is to this, it is about of ¾ of a mile where we own the banks of the river and what the relation of the river is to that aquifer. Is any of it penetrating and a contribution to the groundwater, these are all of the things we would like to see come out of the study.
Paul – That is a really good question. It has been asked before by water users that own wells. If you read the scope of work, one of the tasks of the consultant will be to come up with a method for estimating the impact of wells on river flow based on wells or big ponds and withdrawal that is from groundwater and not directly from the river on river flow based on knowledge of the particular characteristics of that well or pond and the geologic setting and the hydrology. The development of those methods goes parallel with the development of the protected flows. So by the time protected flows are under public discussion, the consultant has a recommendation and a recommendation for estimating the impact of well withdrawal on a river.

Question – We have been testing for nitrogen and phosphorus in the river for the last 10 years, and we have learned that we don't know very much about it. We are wondering if the scope of this, from the input of the wastewater treatment plants, etc., etc. all contributes the river; will we have information on that?
Paul – No, not as a result of this study. There is separate work going on the Souhegan by DES relative to nutrients and dissolved oxygen. That study is underway and once completed then we will have information that will be available.

Ken - Any other questions? One thing obviously that we will have to appreciate here is that there is $350,000 and needless to say we don't expect the consultants to go out and sample hundreds of miles and carry out all the other tasks, so when we take a look at the methodologies that are going to be used here, that is part of the balancing act that we have to figure in as we make a recommendation. There is the ideal and then there is the reality.

Ken – Wayne, please send this out in *word document* so people can insert their comments.

11:15 – 11:30 Other Business:

Motion to adjourn, seconded, all in favor say aye, meeting adjourned.

11:30 Meeting adjourned